

# **Low GWP Refrigerant Market Report by Type (Inorganics, Hydrocarbons, Fluorocarbons and Fluoro-olefins (HFCs and HFOs)), Application (Commercial Refrigeration, Industrial Refrigeration, Domestic Refrigeration, and Others), and Region 2024-2032**

<https://marketpublishers.com/r/LDAD26245293EN.html>

Date: April 2024

Pages: 140

Price: US\$ 3,899.00 (Single User License)

ID: LDAD26245293EN

## **Abstracts**

The global low GWP refrigerant market size reached US\$ 8.1 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 15.3 Billion by 2032, exhibiting a growth rate (CAGR) of 7.09% during 2024-2032. The market is experiencing steady growth driven by the increasing product adoption in the commercial sector for air conditioning, the rising need for efficient refrigeration in various industries, the growing uptake of hydrocarbons, and the development of new low-GWP refrigerants.

**Low GWP Refrigerant Market Analysis:**

**Market Growth and Size:** The global market is experiencing robust growth, driven by the increasing emphasis on environmental sustainability and the phasing out of high GWP refrigerants. The market is witnessing substantial expansion as industries transition towards greener and more climate-friendly refrigeration solutions.

**Major Market Drivers:** Key drivers include the global efforts to mitigate climate change, regulatory initiatives promoting the use of low GWP refrigerants, and the rising awareness of the environmental impact of traditional refrigerants. The demand is further propelled by the need for energy-efficient and environmentally friendly cooling solutions across various sectors.

**Technological Advancements:** Technological advancements, such as the development of next-generation refrigerants with lower GWP, are shaping the market. Ongoing research and innovation focus on creating refrigerants that balance environmental impact, energy efficiency, and safety standards. Advanced technologies aim to address the challenges associated with the transition to low GWP alternatives.

**Industry Applications:** The product finds applications across a wide range of industries, including HVAC (Heating, Ventilation, and Air Conditioning), automotive air conditioning, refrigeration, and industrial cooling. The adoption of low GWP refrigerants is prevalent in new installations as well as retrofits, reflecting a shift towards sustainable cooling practices.

**Key Market Trends:** Key trends include the increasing use of natural refrigerants like hydrofluoroolefins (HFOs) and hydrocarbons, the integration of low GWP alternatives in new equipment designs, and the development of retrofit solutions for existing systems. Additionally, there is a growing focus on energy-efficient refrigeration technologies.

**Geographical Trends:** Geographically, the market exhibits a global shift towards environmentally responsible refrigeration practices. Developed regions with stringent environmental regulations are at the forefront of adopting low GWP alternatives while emerging economies are increasingly recognizing the importance of sustainable cooling solutions.

**Competitive Landscape:** The competitive landscape is characterized by both established chemical manufacturers and new entrants focusing on low GWP refrigerant production. Key players are investing in research and development to create innovative and cost-effective solutions. Partnerships and collaborations with equipment manufacturers and end-users are common strategies to expand market presence.

**Challenges and Opportunities:** Challenges include the need for global standardization, addressing safety concerns associated with some low GWP alternatives, and the phase-out of high GWP refrigerants in existing systems. Opportunities lie in the development of new, efficient, and safe low GWP refrigerants, catering to diverse industrial applications and complying with evolving regulatory frameworks.

**Future Outlook:** The market appears promising, with sustained growth anticipated, driven by the global commitment to reduce greenhouse gas emissions. As regulatory pressures intensify and environmental awareness grows, the market is poised for continued expansion. The future outlook hinges on ongoing technological advancements, industry collaborations, and the successful integration of environmentally friendly refrigeration solutions across various sectors.

Low global warming potential (GWP) refrigerants are substances employed as cooling agents with significantly reduced environmental impact. These refrigerants encompass a range of options, such as hydrocarbons, fluorocarbons, carbon dioxide, and ammonia. They have found widespread application in industrial-scale refrigeration systems like food processing plants, breweries, and cold storage facilities. Additionally, they serve heating and cooling needs for residential and commercial buildings. In contrast to conventional high-GWP refrigerants, their employment yields diminished contributions to climate change and ozone depletion. Furthermore, these low GWP alternatives offer

enhanced safety, improved energy efficiency, lower toxicity, and reduced flammability while aiding in emission reduction efforts. Consequently, their versatile benefits position low GWP refrigerants as essential components within sectors ranging from commercial to industrial and domestic refrigeration.

The global market is majorly driven by the increasing concern over climate change and its direct link to high-GWP refrigerants. In response, industries are transitioning towards low-GWP refrigerants to meet regulatory requirements and mitigate their carbon footprint. These refrigerants offer a tangible solution to reduce greenhouse gas emissions, aligning with sustainability goals set by governments, organizations, and consumers. Additionally, the energy efficiency of low-GWP refrigerants is a significant factor in their adoption. These refrigerants often exhibit better heat transfer properties, enhancing the overall efficiency of cooling and heating systems. This reduces operating costs and aligns with the global push for energy conservation. Moreover, the safety aspect of low-GWP refrigerants is another key driver. Several of these alternatives have lower toxicity and flammability, ensuring safer operation and reduced risks for technicians and end-users. As industries prioritize safety in their operations, the appeal of low-GWP refrigerants continues to grow. Rapid technological innovation and research in refrigerant development have created more efficient and effective low-GWP alternatives. This ongoing research and development contributes to expanding the portfolio of available options, catering to various applications across different industries.

#### Low GWP Refrigerant Market Trends:

##### Introduction of new eco-friendly low GWP refrigerants

The introduction of new eco-friendly low global warming potential (GWP) refrigerants is stimulating the market. As the world grapples with environmental challenges, industries are actively seeking alternatives to high-GWP refrigerants. The development and launch of innovative low-GWP refrigerants offer a compelling solution to reduce greenhouse gas emissions and align with sustainability goals. These new refrigerants adhere to stringent regulatory requirements and resonate with consumer preferences for environmentally responsible products. Industries across commercial, industrial, and residential sectors are eager to adopt these eco-friendly options to enhance their corporate social responsibility efforts and reduce their carbon footprint. The introduction of these refrigerants fuels technological advancements, inspiring further research and development to create even more efficient and effective solutions. As governments and organizations prioritize emission reductions, the availability of new eco-friendly low-GWP refrigerants shapes purchasing decisions, accelerates market growth, and reinforces the broader commitment to combat climate change.

## Increasing product application in the residential sector

The increasing application of low global warming potential (GWP) refrigerants in the residential sector is bolstering the market. As homeowners and builders become more environmentally conscious, a growing demand for sustainable cooling and heating solutions with minimal environmental impact is growing. Low-GWP refrigerants offer a viable alternative to high-GWP options, aligning with the residential sector's sustainability goals. Homeowners are now seeking energy-efficient and eco-friendly cooling systems that provide comfort and reduce their carbon footprint. Adopting low-GWP refrigerants addresses climate change concerns and contributes to a greener living environment. Furthermore, government initiatives and regulations to reduce greenhouse gas emissions support the residential sector's adoption of low-GWP refrigerants. Rebates, incentives, and mandates for environmentally friendly cooling solutions drive the transition toward these alternatives. The increasing awareness of health and safety considerations also plays a role. Low-GWP refrigerants often have lower toxicity and flammability, enhancing residential safety standards. As low-GWP refrigerants gain traction in the residential sector, their market growth is fueled by environmental consciousness, regulatory support, and the desire for sustainable and efficient home cooling solutions.

## Rising demand for frozen food products

The rising demand for frozen food products is fueling market growth. As consumer lifestyles become more fast-paced, the convenience and availability of frozen food options have gained significant popularity. Low-GWP refrigerants play a crucial role in maintaining the freshness and safety of these frozen products while minimizing their environmental impact. They enable the creation of efficient and sustainable cooling systems used in cold storage facilities, distribution centers, and retail freezers for frozen foods. As the demand for frozen food products continues to grow, there's a parallel need for reliable and eco-friendly refrigeration solutions to preserve product quality and adhere to food safety standards. Moreover, the focus on sustainability within the food industry has prompted manufacturers, retailers, and consumers to opt for products and processes that reduce carbon emissions. The use of these refrigerants aligns with these sustainability efforts, contributing to the overall environmental responsibility of the frozen food supply chain.

## Low GWP Refrigerant Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the market,

along with forecasts at the global, regional, and country levels for 2024-2032. Our report has categorized the market based on type and application.

#### Breakup by Type:

Inorganics

Hydrocarbons

Fluorocarbons and Fluoro-olefins (HFCs and HFOs)

Hydrocarbons dominate the market

The report has provided a detailed breakup and analysis of the market based on the type. This includes inorganics, hydrocarbons, and fluorocarbons and fluoro-olefins (HFCs and HFOs). According to the report, hydrocarbons represented the largest segment.

Hydrocarbons, such as propane and isobutane, offer a promising solution due to their low environmental impact and excellent thermodynamic properties. These natural refrigerants have gained traction as alternatives to high-GWP options due to their negligible impact on ozone depletion and minimal contribution to global warming.

The increasing emphasis on sustainability and stringent environmental regulations has led industries to explore hydrocarbons for various cooling applications. Their higher energy efficiency and compatibility with existing systems further enhance their appeal. As companies strive to reduce greenhouse gas emissions and transition towards greener solutions, hydrocarbons emerge as a compelling choice.

The hydrocarbon segment's growth is propelled by its alignment with eco-friendly goals, robust thermodynamic performance, and versatility across different industries. As demand for environmentally responsible refrigerants surges, the hydrocarbons segment continues to shape and advance the market growth.

#### Breakup by Application:

Commercial Refrigeration

Industrial Refrigeration

Domestic Refrigeration

Others

## Commercial refrigeration dominates the market

The report has provided a detailed breakup and analysis of the market based on the application. This includes commercial refrigeration, industrial refrigeration, domestic refrigeration, and others. According to the report, commercial refrigeration represented the largest segment.

With businesses and industries increasingly focusing on environmental sustainability, the need for eco-friendly refrigeration solutions has gained prominence. Low-GWP refrigerants, such as hydrofluorocarbon (HFC) alternatives and natural refrigerants, are gaining traction in commercial settings like supermarkets, restaurants, and hotels.

Commercial refrigeration systems, which include display cases, cold storage, and HVAC units, consume significant energy and can contribute to high greenhouse gas emissions. The adoption of low-GWP refrigerants helps businesses lower their carbon footprint, comply with regulations, and enhance their environmental image.

As businesses seek to balance operational efficiency and environmental responsibility, these refrigerants offer a win-win solution. Manufacturers are responding by developing refrigerants that deliver optimal performance, energy efficiency, and compliance with evolving standards. The growing demand for sustainable and efficient cooling solutions in the commercial sector is propelling the use of these refrigerants, thereby contributing to the expansion of the market.

### Breakup by Region:

- North America
  - United States
  - Canada
- Europe
  - Germany
  - France
  - United Kingdom
  - Italy
  - Spain
- Russia
- Others
- Asia Pacific
  - China



Japan  
India  
South Korea  
Australia  
Indonesia  
Others  
Latin America  
Brazil  
Mexico  
Others  
Middle East and Africa

Asia Pacific exhibits a clear dominance, accounting for the largest market share

The report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, Asia Pacific was the largest market for low GWP refrigerant.

Rapid urbanization, population growth, and economic development in countries like China, India, and Southeast Asian nations have led to increased demand for cooling solutions across various sectors. As environmental concerns gain prominence, governments and industries in the region are actively adopting low-GWP refrigerants to align with global climate goals and regional regulations. The need for sustainable cooling, particularly in densely populated urban areas, fuels the adoption of these eco-friendly alternatives.

Additionally, the growing middle-class population in the Asia Pacific is driving demand for consumer goods, including refrigeration-dependent products like food and beverages. This increases the requirement for energy-efficient and environmentally friendly cooling systems, further boosting the market. The region's prominence in manufacturing and exports also influences the market. As industries prioritize sustainability in supply chains, the demand for these refrigerants for industrial processes and logistics intensifies.

**Competitive Landscape:**

Top companies are actively contributing to strengthening the low global warming

potential (GWP) refrigerant market growth through a range of strategic initiatives. They invest significantly in research and development to innovate and introduce new low-GWP refrigerant formulations that align with evolving environmental regulations and consumer demands. These companies leverage their industry expertise to provide comprehensive solutions, from manufacturing to distribution, ensuring seamless adoption of low-GWP refrigerants by diverse sectors. Furthermore, top companies play a pivotal role in raising awareness about the benefits of these refrigerants through targeted marketing campaigns and educational initiatives. They collaborate with stakeholders, including governments and regulatory bodies, to shape policies incentivizing the transition to eco-friendly alternatives. By driving technological advancements, promoting sustainable practices, and championing the adoption of these refrigerants, these industry leaders pave the way for a greener and more efficient cooling landscape, thus accelerating the market expansion.

The report has provided a comprehensive analysis of the competitive landscape in the low GWP refrigerant market. Detailed profiles of all major companies have also been provided.

A-Gas International Ltd.

Arkema

Daikin Industries Ltd.

Danfoss A/S

GTS SPA

Harp International Ltd

Honeywell International Inc.

Linde plc

Messer Group

Tazzetti S.p.A

The Chemours Company

Recent Developments:

In July 2022, A-Gas International Ltd acquired Certified Refrigerant Services, Inc. (CRS) in Punta Gorda, Florida.

In July 2023, Arkema partnered with Polymem and Tergys to develop innovative autonomous filtration systems to supply drinking water.

In August 2023, Daikin Industries Ltd decided to establish a new production base for air conditioners.

Key Questions Answered in This Report



1. How big is the global low GWP refrigerant market?
2. What is the expected growth rate of the global low GWP refrigerant market during 2024-2032?
3. What are the key factors driving the global low GWP refrigerant market?
4. What has been the impact of COVID-19 on the global low GWP refrigerant market?
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